REMARKS

Applicants' thank the Examiner for the opportunity to discuss the claimed subject matter in person. This amendment is responsive to the Office Action mailed June 17, 2003. Claims 1-3 and 6-18 are currently pending in the application. Claims 19-29 are withdrawn from consideration in response to the telephonic negotiation with the Examiner on January 6, 2003, concerning the issuance of a Restriction Requirement. This amendment amends Claims 1 and 11 to clarify the claimed subject matter to allow one skilled in the art to more fully appreciate Applicants' claimed invention. The amendments present no new matter and they present no new issues and hence, require no further search. In view of the amendments made above and the comments set forth below, Applicants' respectfully urge the Examiner to reconsider the outstanding rejection and pass the claims to allowance.

IDS:

Applicants' submit an IDS in conjunction with the Request for Continued Examination in compliance with MPEP § 2001.06(b).

Drawings:

With regard to the Examiner's rejection to the drawing under 37 C.F.R. § 1.83(a) Applicants' amend Figure 1 to clarify the claimed input/output interface and amend Figure 2 to include a clock signal waveform.

Specification:

Applicants' amend the specification to future clarify that the output signal 32 includes a first value 31, a second value 33 and a third value 35. Applicants' also amend to specification to associate the clock signal with reference designation "37".

Claim Rejections under 35 U.S.C. § 112:

Claims 1-3 and 6-10 stand rejected under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter which is not described in the specification in such a

way as to reasonably convey to one skilled in the art that the inventors at the time that the application was filed had possession of the claimed invention. Applicants' respectfully traverse this rejection on the basis of the above amendments and following arguments.

Regarding the rejection of Claim 1, Applicants' amend Claim 1 to remove the recited indicator feature. Claims 2, 3, and 6-10 depend, directly or indirectly from amended Claim 1, and, therefore no longer recite an indicator.

Accordingly, Applicants' request the Examiner to reconsider and withdraw the claim rejections under 35 U.S.C. § 112.

Claims Rejections under 35 U.S.C. § 112, second paragraph:

Claim 6, 11, 18 stands rejected under 35 U.S.C. § 112, second paragraph for allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants' regard as their invention.

Applicants' amend Claim 11 to clarify and move definitely claim the recited step of asserting output signal. Accordingly, Applicants respectfully urge the Examiner to reconsider and withdraw the rejection of Claims 11-18 under 35 U.S.C. § 112, second paragraph.

Claim Rejections under 35 U.S.C. § 103

For purposes of clarity in the discussion below, the respective claim rejections under 35 U.S.C. § 103, are discussed separately.

A. Rejection of Claims 1-3 and 6-10 under 35 U.S.C § 103(a):

The Office Action rejects Claims 1-3 and 6-10 as being unpatentable over U.S. Patent No. 6,091,255 of Godfrey (hereinafter "Godfrey"). Applicants' respectfully traverse this rejection on the basis of the above amendments and the following arguments, and further contend that Godfrey fails to teach or suggest all elements of these claims, as described below, and hence, does not obviate the claimed invention.

Summary of the Claimed Invention:

Applicants' invention recited in Claims 1-3 and 6-10 as amended, is directed to a thermal sensor in an integrated circuit. The thermal sensor includes a register and an input/output interface. The register holds a response of the thermal sensor and the input/output interface includes an input node to receive an input trigger to trigger the thermal sensor to output on an output node of the interface an output signal. The output signal includes a first value that indicates the thermal sensor is sensing the temperature of the integrated circuit a second value representative of the response held by the register, and a third value generated by the thermal sensor that indicates the thermal sensor is functioning properly.

An advantage of the thermal sensor for sensing a temperature of an integrated circuit of the present invention is the simplicity of construction, conservation of costs and the ease in utility of the thermal sensor and method. The sensor and method benefit an integrated circuit that seeks a sensor capable of indicating its operability while keeping the external pin density of the integrated circuit to a minimum. As a result, an integrated circuit can communicate an accurate internal temperature reading from an internal sensor to a device external to the integrated circuit and provide a value that indicates the sensors operability as part of the communication without significantly increasing external pin density of the packaged integrated circuit.

Claims 1-3 And 6-10 Are Patentably Distinct From The Godfrey Patent:

The Godfrey Patent is directed to an on chip thermometer having a clock circuit, a temperature responsive circuit or thermal sensor, and a counter. The clock circuit operates at a fixed frequency and generates a clock signal at the fixed frequency. The temperature responsive circuit or temperature sensor couples to the clock circuit and receives the clock signal from the clock circuit. In response to receiving an enable signal, the temperature responsive circuit or temperature sensor generates an output signal. The

counter is coupled to receive the output signal from the temperature responsive circuit. The counter then generates the value indicative of a local temperature of the integrated circuit. The thermometer optionally includes a register electronically coupled to the counter and physically located outside of the temperature responsive circuit or temperature sensor.

Claims 1-3 and 6-10, as amended, are not rendered unpatentable by Godfrey. Godfrey fails to teach or disclose each and every element recited in Claim 1-3 and 6-10. Specifically, Godfrey fails to teach or suggest a thermal sensor in an integrated circuit that includes a register and an input/output interface, having an input node to receive an input trigger to trigger the thermal sensor to output on an output node of the interface an output signal having a first value, a second value, and a third value. Furthermore, Godfrey fails to teach or suggest that the first value indicates when the thermal sensor is sensing, that the second value represents a value sensed by the thermal sensor, and that the third value indicates an operable state of the thermal sensor.

Godfrey teaches assertion of an output signal having a value that indicates a temperature of the integrated circuit. The output signal from the thermometer disclosed by Godfrey fails to include a first value indicating that the sensor is sensing and fails to include a third value that indicates whether the thermal sensor is operating properly. One skilled in the art readily recognizes that merely because a device is outputting a signal after being triggered by a trigger signal is not clear and definite indication that the device is functioning properly. For example, the third value provided in the output signal of amended Claim 1 is capable of indicating a stuck at bit fault. Nowhere does the Godfrey patent teach or suggest such a feature.

Hence, Applicants' contend that Godfrey fails to teach or suggest each and every feature recited in Claims 1-3 and 6-10 as amended. Accordingly, Applicants' request the Examiner to reconsider and withdraw the rejection of Claims 1-3 and 6-10, as amended, under 35 U.S.C. § 103(a).

B. Rejection of Claims 11-18 under 35 U.S.C. § 103(a):

Claims 11-18, as amended, are directed to a method for a thermal sensor in an integrated circuit to provide an indication that the thermal sensor is functioning properly. The use of the method enables other integrated circuits to receive a response from an integrated circuit having a thermal sensor and determine from the response of the thermal sensor whether the thermal sensor is functioning properly. In accordance with the method of Claims 11-18 as amended, an input signal is asserted on a first input/output pin of the thermal sensor to initiate thermal sensing of the integrated circuit by the thermal sensor. In turn, the thermal sensor senses a temperature of the integrated circuit. The thermal sensor asserts an output signal on a second input/output pin of the thermal sensor. The output signal provides a first value indicating said step of sensing in being performed, a second value representative of the temperature of the integrated circuit and a third value that provides an indication that the thermal sensor is functioning properly.

Godfrey is concerned with a thermometer that includes a temperature sensor and is not concerned with a method for a thermal sensor to provide an indication that the thermal sensor is functioning properly. Nowhere does Godfrey teach or suggest that the output signal from the temperature sensor of the thermometer includes a third value that provides an indication that the sensor is functioning properly.

Thus, Applicants' contend that Godfrey fails to teach or suggest each and every feature recited in Claims 11-18 as amended. Furthermore, Applicants' contend that neither the Examiner nor the Godfrey reference provides a suggestion or motivation to modify the Godfrey reference. As a result, the Examiner fails to establish a *prima facie* case of obviousness. Accordingly, Applicants' urge the Examiner to reconsider and withdraw the rejection of Claims 11-18 as amended under 35 U.S.C. § 103(a).

CONCLUSION

In view of the amendments and remarks set forth above, Applicants' contend that Claims 1-3 and 6-18, as amended are presently pending in this application, are patentable and in condition for allowance. If the Examiner deems there are any remaining issues, we invite the Examiner to call the undersigned at (617) 227-7400.

Respectfully submitted,

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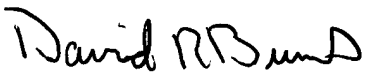

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